**SUPPLEMENTARY INFORMATION FOR:**

**Morphometric analysis of the mandible of primitive sabertoothed felids from the late Miocene of Spain**

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**Table S1**: Description of the Type II fixed landmarks used in this study.

|  |  |  |
| --- | --- | --- |
| **Landmark** | **Description** | **Morphology captured** |
| **1** | Junction between the coronoid process and the mandibular condyle. | This is posterior base of the coronoid process, serving as the first anchorage point for the curve characterising the shape of the coronoid process. |
| **2** | Most posterior point of the alveolus of on the dorsal side of the mandible. | Anterior extent of the tooth row, second anchorage point for the curve characterising the shape of the coronoid process. |
| **3** | Midpoint of the lateral rim between the alveoli of m1 and p4.on the labial side of the mandible. | Position and size of m1 and p4. |
| **4** | Midpoint of the lateral rim between the alveoli of m1 and p4.on the lingual side of the mandible. | Position and size of m1 and p4. |
| **5** | Midpoint of the lateral rim between the alveoli of p3 and p4.on the labial side of the mandible. | Position and size of p3 and p4. |
| **6** | Midpoint of the lateral rim between the alveoli of p3 and p4.on the lingual side of the mandible. | Position and size of p3 and p4. |
| **7** | Posterior-most point of the alveolus of the lower canine on the dorsal side of the mandible. | Anterior extent of the lower canine, serving as the second anchorage point for the curve characterising the shape of the diastema. Position and size of the lower canine and the diastema. |
| **8** | Midpoint of the lateral rim between the alveoli of the lower canine and i1 on the anterior side of the mandible. | Anterior extent of the lower canine and the symphysis, first anchorage point for the curve characterising the symphysial region and the ventral border of the mandibular corpus. |
| **9** | Posterior-most point of angular process on the dorsal side of the mandible. | Posterior extent of the angular process, second anchorage point for the curve characterising the symphysial region and the ventral border of the mandibular corpus. |
| **10** | Labial-most point of the mandibular condyle | Labial extent of the mandibular condyle |
| **11** | Ventral-most point of the mandibular condyle | Ventral extent of the mandibular condyle |
| **12** | Dorsal-most point of the mandibular condyle | Dorsal extent of the mandibular condyle |

**Table S2:** Raw measurements and categorical data for each specimen.For the categorical variables: 0=absence, 1=presence. Abbreviations: ML: mandibular length; APMCH: angular process to mandibular condyle, height; APCPH: angular process to coronoid process ,height; APm1L: angular process to the notch between the protoconid and paraconid of m1, length; CPcL: length from the coronoid process to the lower canine; CTL: cheek teeth length; m1cL: m1 to c length; DL: diastema length; SH: symphysial height. V.p3 = vestigial p3.

| Taxon | Specimen n° | p3 | V.p3 | p2 | CPcL | m1cL | CTL | APm1L | APCPH | APMCH | ML | DL | SH |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Promegantereon ogygia* | B-5264 | 1 | 0 | 1 | 118,38 | 69,23 | 45,93 | 54,27 | 50,4 | 24,64 | 111,56 | 14,11 | 32,89 |
| *Promegantereon ogygia* | B-7042 | 1 | 0 | 0 | 120,13 | 69,15 | 44,23 | 58,45 | 55,54 | 28,64 | 120,05 | 15,31 | NA |
| *Promegantereon ogygia* | B-751 | 1 | 0 | 1 | NA | 70,21 | 45,42 | 56,71 | NA | 29,65 | 122,26 | 13,24 | 31,69 |
| *Promegantereon ogygia* | B-3109 | 1 | 0 | 1 | 116,45 | 71,6 | 45,2 | 57,54 | 58,09 | 26,71 | 119,38 | 17,16 | 31,41 |
| *Promegantereon ogygia* | B-134 | 1 | 0 | 0 | NA | 75,13 | 46,89 | NA | NA | 28,98 | 127,8 | 16,89 | 36,93 |
| *Promegantereon ogygia* | B-462 | 1 | 0 | 1 | NA | NA | NA | NA | NA | NA | NA | 13,9 | NA |
| *Promegantereon ogygia* | B-5198 | 1 | 0 | 1 | 116,05 | 69,54 | 44,64 | 58,43 | NA | 26,29 | 115,73 | 13,37 | 31,61 |
| *Promegantereon ogygia* | B-732 | 1 | 0 | 0 | 110,93 | 66,7 | 41,47 | 52,57 | 51,51 | 27,47 | 107,85 | 15,14 | 27,77 |
| *Promegantereon ogygia* | B-2376 | 1 | 0 | 1 | 112,81 | 69,18 | 44,4 | 55,54 | 54,19 | 26,01 | 118,75 | 14,5 | 27,67 |
| *Promegantereon ogygia* | B-4708 | 1 | 0 | 1 | NA | 77,04 | 47,76 | NA | NA | 28,31 | 128,06 | 13,87 | 32,229 |
| *Promegantereon ogygia* | BAT-1'01 E5-17 | 1 | 0 | 0 | 113,5 | 69,61 | 42,01 | 51,7 | NA | NA | 118,85 | 18,37 | 30,23 |
| *Promegantereon ogygia* | BAT-1'02 E7-66 | 1 | 0 | 1 | 129,34 | 81,98 | 49,08 | 60,06 | 57,43 | 27,82 | 137,88 | 20,17 | 36,98 |
| *Promegantereon ogygia* | BAT-1'04 E4-115 | 1 | 0 | 0 | 124 | 76,88 | 47,67 | 58,56 | NA | NA | NA | 18,14 | NA |
| *Promegantereon ogygia* | BAT-1'05 D8-755 | 1 | 0 | 0 | 121,77 | 75,13 | 47,04 | 58,75 | 53,07 | 26,74 | 124,59 | 14,96 | 35,08 |
| *Promegantereon ogygia* | BAT-1'07 E5-97 | 1 | 0 | 1 | 120,27 | 76,54 | 49,54 | 65,64 | 59,84 | 28,93 | 123,75 | 14,03 | 33,14 |
| *Promegantereon ogygia* | BAT-1'07 E5-102 | 1 | 0 | 0 | 130,6 | 75,02 | 47,77 | 65,36 | 62,94 | 30,61 | 127,96 | 14,27 | 35,62 |
| *Promegantereon ogygia* | BAT-3'09 207 | 1 | 0 | 0 | 128,81 | 80,05 | 48,51 | 57,96 | 59,82 | 28,51 | 129,06 | 15,38 | 31,04 |
| *Promegantereon ogygia* | BAT-3'09 1250 | 1 | 0 | 0 | 131,99 | 77,03 | 46,99 | 62,02 | 66,24 | 29,82 | 127,07 | 19,5 | 33,82 |
| *Promegantereon ogygia* | BAT-3'09 779 | 1 | 0 | 0 | 118,41 | 69,73 | 45,48 | 55,56 | 54,45 | 22,58 | 121,1 | 15,23 | 28,46 |
| *Promegantereon ogygia* | BAT-3'10 1773 | 1 | 0 | 0 | 108,06 | 66,71 | 45,73 | 51,78 | 54,68 | 24,66 | 113,11 | NA | 33,92 |
| *Promegantereon ogygia* | BAT-3'11 132 | 1 | 0 | 0 | 122,22 | NA | 45,91 | 56,05 | 63,75 | 29,5 | 128,09 | 18,13 | 31,34 |
| *Promegantereon ogygia* | BAT-3'11 1144 | 1 | 0 | 0 | NA | NA | NA | NA | NA | NA | 120,92 | NA | 28,46 |
| *Promegantereon ogygia* | BAT-3'11 2020 | 1 | 0 | 0 | 113,61 | 69,55 | 45,48 | 51,4 | NA | NA | 114,2 | 11,86 | 30,15 |
| *Promegantereon ogygia* | BAT-3'11 2339 | 1 | 0 | 1 | 120,19 | 76,27 | 46,41 | 54,6 | 55,93 | 24,32 | 123,43 | 16,94 | 33,07 |
| *Promegantereon ogygia* | BAT-3'13 1596 | 1 | 0 | 0 | 117,38 | 68,88 | 42,28 | 53,76 | 57,88 | 25,86 | 119,96 | 20,2 | 31,9 |
| *Promegantereon ogygia* | BAT-3'13 2070 | 1 | 0 | 1 | 120,51 | 69,67 | 41,2 | NA | NA | 26,48 | 117,68 | 18,71 | 33,16 |
| *Promegantereon ogygia* | BAT-3'13 2057 | 1 | 0 | 1 | 121,62 | NA | 42,89 | 57,13 | 60,9 | 28,19 | 117,82 | NA | 29,59 |
| *Promegantereon ogygia* | BAT-3'14 94 | 1 | 0 | 1 | 123,68 | 72,09 | 45,01 | 62,1 | 55,24 | 28,18 | 126,04 | 16,78 | 34,09 |
| *Machairodus aphanistus* | B-2230 | 1 | 0 | 0 | 200,72 | 119,15 | 72,89 | 91,2 | 73,79 | 33,42 | 202,22 | 30,66 | 53,57 |
| *Machairodus aphanistus* | B-3974 | 1 | 0 | 1 | 194,12 | 122,53 | 76,99 | 81,86 | 82,38 | 35,89 | 193,44 | 25,06 | 56,3 |
| *Machairodus aphanistus* | B-382 | 1 | 0 | 0 | 189,36 | 114,16 | 68,46 | NA | 79,3 | 32,89 | 192,6 | 28,45 | 51,08 |
| *Machairodus aphanistus* | B-8630 | 1 | 0 | 1 | NA |  | NA | NA | NA | NA | NA | 28,24 | 38,89 |
| *Machairodus aphanistus* | BAT-1'01 E7-82 | 1 | 0 | 0 | 183,1 | 114,86 | 76,11 | NA | 76,71 | 34,81 | 185,3 | 16,62 | 53,76 |
| *Machairodus aphanistus* | BAT-1'04 F6-130 | 1 | 0 | 0 | 197,44 | 115,4 | 73,82 | 85,94 | 78,27 | 34,81 | 194,52 | 27,09 | 56,28 |
| *Machairodus aphanistus* | BAT-1'05 E6-42 | 1 | 0 | 0 | NA | 138,77 | 75,48 | 108,27 | NA | 40,68 | 230,44 | 37,23 | 52,89 |
| *Machairodus aphanistus* | BAT-1'05 F6-265 | 1 | 0 | 0 | 231,98 | 130,22 | 80,38 | 108,96 | 90,43 | 37,62 | 231,76 | 30,99 | 62,31 |
| *Machairodus aphanistus* | BAT-1'06 F8-80 | 1 | 0 | 0 | 202,68 | 129,23 | 74,76 | 100,94 | NA | 38,24 | 219,12 | 38,97 | 67,39 |
| *Machairodus aphanistus* | BAT-1'06 E4-52 | 1 | 0 | 0 | 211,48 | 127,01 | 77,59 | NA | 88,24 | 41,67 | 211,96 | 25 | 53,85 |
| *Machairodus aphanistus* | BAT-3'07 672 | 1 | 0 | 0 | 221,18 | 139,46 | 75,31 | NA | 102,28 | 46,48 | 219,88 | 33,59 | 62,62 |
| *Machairodus aphanistus* | BAT-3'07 698 | 1 | 0 | 0 | 191,8 | NA | 69,92 | 83,27 | 86,05 | 39,03 | 183,96 | NA | 50,05 |
| *Machairodus aphanistus* | BAT-3'08 252 | 1 | 0 | 0 | 174,78 | 113,03 | 74,85 | 79,9 | 78,08 | 35,22 | 178,2 | 14,24 | NA |
| *Machairodus aphanistus* | BAT-3'09 1017 | 1 | 0 | 0 | NA | 113,42 | 56,78 | NA | NA | NA | 188,44 | 43,48 | 51,9 |
| *Machairodus aphanistus* | BAT-3'09 1344 | 1 | 0 | 0 | 208,84 | 128,84 | 74,04 | 97,81 | 97,82 | 45,99 | 211,38 | 36,24 | 61,9 |
| *Machairodus aphanistus* | BAT-3'11 970a | 1 | 0 | 1 | 211,86 | NA | 68,57 | 93,86 | 94,63 | NA | 197,64 | NA | NA |
| *Machairodus aphanistus* | BAT-3'13 1916b | 1 | 0 | 1 | 171,94 | 106,72 | 67,31 | 82,93 | 79,09 | 32,51 | 171,18 | 24,14 | 52,13 |
| *Amphimachairodus giganteus* | BC-102 | 1 | 0 | 1 | 230,22 | 145,25 | 74,94 | 88,65 | 100,49 | 44,56 | 254,18 | 54,91 | 73,14 |
| *Smilodon fatalis* | M7786-9732 | 0 | 0 | 0 | 172,24 | 135,25 | 51,5 | 72,72 | 76,19 | 38,52 | 191,26 | 69,88 | 64,01 |
| *Megantereon* sp. Indet. | CB-20 | 1 | 1 | 0 | 139,33 | 100,87 | 45,17 | 66,33 | 63,46 | 28,8 | 154,98 | 43,56 | 53,76 |
| *Xenosmilus hodsonae* | BC-113 | 0 | 0 | 0 | 175,78 | 111,55 | 50,82 | 56,57 | 80,62 | 41,16 | 204,5 | 36,47 | 68,95 |
| *Dinofelis barlowi* | M5913 | 1 | 1 | 0 | 157,08 | 101,99 | 58,48 | 66,61 | 76,295 | 41,36 | 166,48 | 36,54 | 44,82 |
| *Homotherium crenatidens* | CB-06 | 1 | 1 | 0 | 199,34 | 126,08 | 62,08 | 95,86 | 83,05 | 43,64 | 224,62 | 53,73 | 71,91 |
| *Panthera leo* | MNCN COMP-255 | 1 | 0 | 1 | 211,48 | 116,07 | 66,69 | 107,44 | 81,75 | 33,1 | 202,22 | 29,02 | 70,8 |
| *Panthera tigris* | MNCN COMP-999 | 1 | 0 | 0 | 188,98 | 107,14 | 60,29 | 94,05 | 86,59 | 38,81 | 201,58 | 27,83 | 61,54 |
| *Panthera uncia* | BC-56 | 1 | 0 | 0 | 120,44 | 70,62 | 48,15 | 60,38 | 57,47 | 21,92 | 124,73 | 12,83 | 37,48 |
| *Panthera pardus* | AMNH 113745 | 1 | 0 | 0 | 105,22 | 65,06 | 40,3 | 76,09 | 50,36 | 20,9 | 108,19 | 19,15 | 30,09 |
| *Panthera onca* | MAV-2415 | 1 | 0 | 0 | 153,62 | 84,88 | 52,89 | 74,17 | 70,13 | 28,39 | 160,91 | 15,24 | 54,77 |
| *Puma concolor* | ISM-ZOO 693928 | 1 | 0 | 0 | 126,33 | 71,21 | 42,2 | 65,38 | 65,13 | 29,17 | 130,45 | 14,8 | 37,04 |
| *Lynx rufus* | OUVC 9576 | 1 | 0 | 0 | 81,78 | 45,14 | 28,82 | 41,39 | 37,55 | 17,61 | 80,27 | 10,55 | 21,54 |
| *Acinonyx jubatus* | MNCN-COMP 3438 | 1 | 0 | 0 | 122,4 | 58,83 | 44,3 | 71,27 | 60,92 | 28,14 | 125,51 | 6,1 | 28,53 |
| *Caracal caracal* | MAV-1518 | 1 | 0 | 0 | 82,33 | 39,78 | 27,66 | 45,2 | 38,16 | 16,37 | 72,12 | 6,25 | 17,39 |
| *Felis lybica* | MAV-965 | 1 | 0 | 0 | 75,49 | 40,67 | 27,99 | 37,5 | 33,98 | 15,51 | 46,51 | 7,27 | 20,27 |
| *Neofelis nebulosa* | BC-005 | 1 | 0 | 0 | 124,93 | 69,84 | 37,62 | 59,12 | 48,97 | 22,38 | 123,01 | 20,56 | 44,4 |

**Table S3:** Ratios and categorical data for each specimen.For the categorical variables: 0=absence, 1=presence. Abbreviations: ML: mandibular length; APMCH: angular process to mandibular condyle, height; APCPH: angular process to coronoid process ,height; APm1L: angular process to the notch between the protoconid and paraconid of m1, length; CPcL: length from the coronoid process to the lower canine; CTL: cheek teeth length; m1cL: m1 to c length; DL: diastema length; SH: symphysial height. V.p3 = vestigial p3.

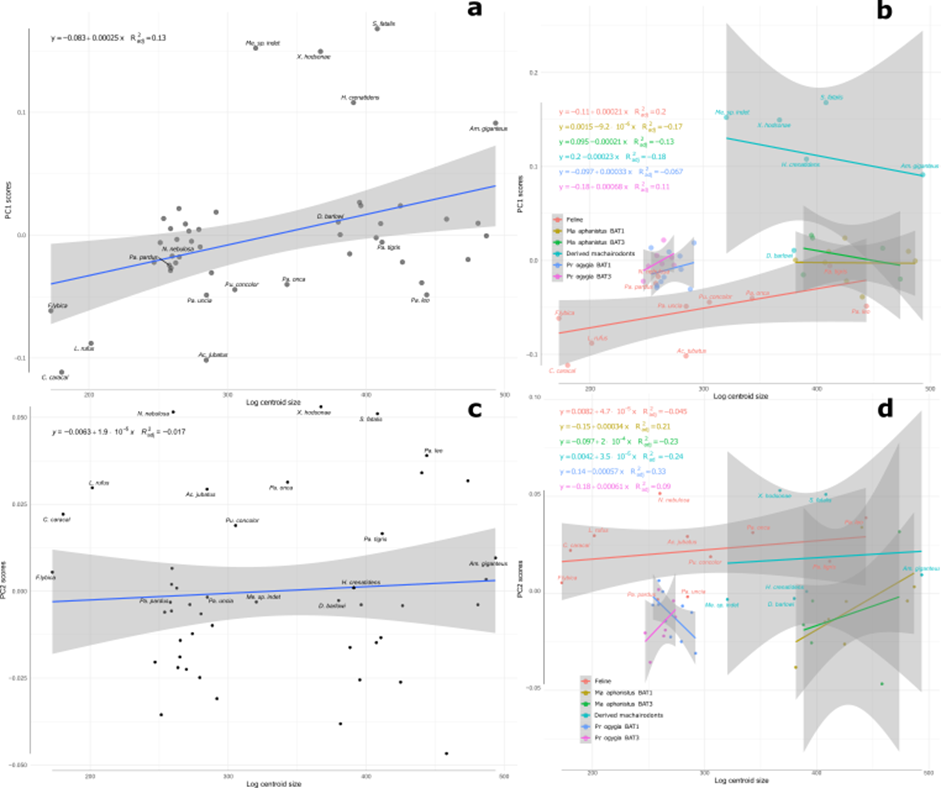
| Taxon | Specimen n° | p3 | V.p3 | p2 | CPcL /ML | CTL/ m1cL | (m1cL- DL- CTL)/  m1cL | DL/ (DL+ CTL) | m1cL /ML | APm1L/ML | APCPH/ML | APMCH/ APCPH | DL/ML | SH/ML |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Promegantereon ogygia* | B-5264 | 1 | 0 | 1 | 1,0611 | 0,6634 | 0,1327 | 0,3002 | 0,6206 | 0,48646 | 0,4518 | 0,4889 | 0,1265 | 0,2948 |
| *Promegantereon ogygia* | B-7042 | 1 | 0 | 0 | 1,0007 | 0,6396 | 0,139 | NA | 0,5760 | 0,48688 | 0,4626 | 0,5157 | 0,1275 | NA |
| *Promegantereon ogygia* | B-751 | 1 | 0 | 1 | NA | 0,6469 | 0,1645 | 0,2947 | 0,5743 | 0,46385 | NA | NA | 0,1082 | 0,2592 |
| *Promegantereon ogygia* | B-3109 | 1 | 0 | 1 | 0,9755 | 0,6313 | 0,1290 | 0,3533 | 0,5998 | 0,48199 | 0,4866 | 0,4598 | 0,1437 | 0,2631 |
| *Promegantereon ogygia* | B-134 | 1 | 0 | 0 | NA | 0,6241 | 0,1511 | 0,3138 | 0,5879 | NA | NA | NA | 0,1327 | 0,289 |
| *Promegantereon ogygia* | B-462 | 1 | 0 | 1 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| *Promegantereon ogygia* | B-5198 | 1 | 0 | 1 | 1,0028 | 0,6419 | 0,1658 | 0,2972 | 0,6009 | 0,50488 | NA | NA | 0,1155 | 0,2731 |
| *Promegantereon ogygia* | B-732 | 1 | 0 | 0 | 1,0286 | 0,6217 | 0,1513 | 0,3528 | 0,6184 | 0,48744 | 0,4776 | 0,5333 | 0,1404 | 0,2575 |
| *Promegantereon ogygia* | B-2376 | 1 | 0 | 1 | 0,95 | 0,6418 | 0,1486 | 0,3438 | 0,5826 | 0,46771 | 0,4563 | 0,48 | 0,1221 | 0,2330 |
| *Promegantereon ogygia* | B-4708 | 1 | 0 | 1 | NA | 0,6199 | 0,2000 | 0,3009 | 0,6016 | NA | NA | NA | 0,1083 | 0,2517 |
| *Promegantereon ogygia* | BAT-1'01 E5-17 | 1 | 0 | 0 | 0,955 | 0,6035 | 0,1326 | 0,378 | 0,5857 | 0,435 | NA | NA | 0,1546 | 0,2543 |
| *Promegantereon ogygia* | BAT-1'02 E7-66 | 1 | 0 | 1 | 0,9381 | 0,5987 | 0,1553 | 0,3529 | 0,5946 | 0,4356 | 0,4165 | 0,4844 | 0,1463 | 0,2682 |
| *Promegantereon ogygia* | BAT-1'04 E4-115 | 1 | 0 | 0 | NA | 0,6201 | 0,144 | NA | NA | NA | NA | NA | NA | NA |
| *Promegantereon ogygia* | BAT-1'05 D8-755 | 1 | 0 | 0 | 0,9774 | 0,6261 | 0,1748 | 0,299 | 0,6030 | 0,47155 | 0,426 | 0,5039 | 0,1201 | 0,2816 |
| *Promegantereon ogygia* | BAT-1'07 E5-97 | 1 | 0 | 1 | 0,9719 | 0,6472 | 0,1694 | 0,2974 | 0,6185 | 0,53042 | 0,4836 | 0,4835 | 0,1134 | 0,2678 |
| *Promegantereon ogygia* | BAT-1'07 E5-102 | 1 | 0 | 0 | 1,0206 | 0,6368 | 0,1730 | 0,2860 | 0,5863 | 0,51078 | 0,4919 | 0,4863 | 0,1115 | 0,2784 |
| *Promegantereon ogygia* | BAT-3'09 207 | 1 | 0 | 0 | 0,9981 | 0,606 | 0,2019 | 0,3313 | 0,6202 | 0,44909 | 0,4635 | 0,4766 | 0,1192 | 0,2405 |
| *Promegantereon ogygia* | BAT-3'09 1250 | 1 | 0 | 0 | 1,0387 | 0,6100 | 0,1368 | 0,3657 | 0,6062 | 0,48808 | 0,5213 | 0,4502 | 0,1535 | 0,2661 |
| *Promegantereon ogygia* | BAT-3'09 779 | 1 | 0 | 0 | 0,9778 | 0,6522 | 0,1294 | 0,3486 | 0,5758 | 0,45879 | 0,4496 | 0,4147 | 0,1258 | 0,2350 |
| *Promegantereon ogygia* | BAT-3'10 1773 | 1 | 0 | 0 | 0,9553 | 0,6855 | NA | NA | 0,5898 | 0,45778 | 0,4834 | 0,451 | NA | 0,2999 |
| *Promegantereon ogygia* | BAT-3'11 132 | 1 | 0 | 0 | 0,9542 | NA | NA | 0,3665 | NA | 0,43758 | 0,4977 | 0,4627 | 0,1415 | 0,2447 |
| *Promegantereon ogygia* | BAT-3'11 1144 | 1 | 0 | 0 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0,2354 |
| *Promegantereon ogygia* | BAT-3'11 2020 | 1 | 0 | 0 | 0,9948 | 0,6539 | 0,1756 | 0,2823 | 0,6090 | 0,45009 | NA | NA | 0,1039 | 0,2640 |
| *Promegantereon ogygia* | BAT-3'11 2339 | 1 | 0 | 1 | 0,9737 | 0,6085 | 0,1694 | 0,3387 | 0,6179 | 0,44236 | 0,4531 | 0,4348 | 0,1372 | 0,2679 |
| *Promegantereon ogygia* | BAT-3'13 1596 | 1 | 0 | 0 | 0,9785 | 0,6138 | 0,0929 | 0,3877 | 0,5742 | 0,44815 | 0,4825 | 0,4468 | 0,1684 | 0,2659 |
| *Promegantereon ogygia* | BAT-3'13 2070 | 1 | 0 | 1 | 1,0240 | 0,5914 | 0,1401 | 0,3607 | 0,5920 | NA | NA | NA | 0,159 | 0,2818 |
| *Promegantereon ogygia* | BAT-3'13 2057 | 1 | 0 | 1 | 1,0323 | NA | NA | NA | NA | 0,48489 | 0,5169 | 0,4629 | NA | 0,2511 |
| *Promegantereon ogygia* | BAT-3'14 94 | 1 | 0 | 1 | 0,9813 | 0,6244 | 0,1429 | 0,3299 | 0,572 | 0,4927 | 0,4383 | 0,5101 | 0,1331 | 0,2705 |
| *Machairodus aphanistus* | B-2230 | 1 | 0 | 0 | 0,9926 | 0,6117 | 0,1309 | 0,364 | 0,5892 | 0,45099 | 0,3649 | 0,4529 | 0,1516 | 0,2649 |
| *Machairodus aphanistus* | B-3974 | 1 | 0 | 1 | 1,0035 | 0,6283 | 0,1671 | 0,3080 | 0,6334 | 0,42318 | 0,4259 | 0,4357 | 0,1295 | 0,2910 |
| *Machairodus aphanistus* | B-382 | 1 | 0 | 0 | 0,9832 | 0,5997 | 0,1511 | 0,3577 | 0,5927 | NA | 0,4117 | 0,4147 | 0,1477 | 0,2652 |
| *Machairodus aphanistus* | B-8630 | 1 | 0 | 1 | NA | NA | NA | 0,4207 | NA | NA | NA | NA | NA | NA |
| *Machairodus aphanistus* | BAT-1'01 E7-82 | 1 | 0 | 0 | 0,9881 | 0,6626 | 0,1927 | 0,2361 | 0,6199 | NA | 0,414 | 0,4538 | 0,0897 | 0,2901 |
| *Machairodus aphanistus* | BAT-1'04 F6-130 | 1 | 0 | 0 | 1,0150 | 0,6397 | 0,1256 | 0,3249 | 0,5933 | 0,44181 | 0,4024 | 0,4447 | 0,1393 | 0,2893 |
| *Machairodus aphanistus* | BAT-1'05 E6-42 | 1 | 0 | 0 | NA | 0,5439 | 0,1878 | 0,4131 | 0,6022 | 0,46984 | NA | NA | 0,1616 | 0,2295 |
| *Machairodus aphanistus* | BAT-1'05 F6-265 | 1 | 0 | 0 | 1,0009 | 0,6173 | 0,1448 | 0,3321 | 0,5619 | 0,47014 | 0,3902 | 0,4160 | 0,1337 | 0,26886 |
| *Machairodus aphanistus* | BAT-1'06 F8-80 | 1 | 0 | 0 | 0,925 | 0,5785 | 0,1199 | 0,3664 | 0,5898 | 0,46066 | NA | NA | 0,1778 | 0,3075 |
| *Machairodus aphanistus* | BAT-1'06 E4-52 | 1 | 0 | 0 | 0,9977 | 0,6109 | 0,1923 | 0,3171 | 0,5992 | NA | 0,4163 | 0,4722 | 0,1179 | 0,2541 |
| *Machairodus aphanistus* | BAT-3'07 672 | 1 | 0 | 0 | 1,0059 | 0,5400 | 0,2191 | 0,3491 | 0,6343 | NA | 0,4652 | 0,4544 | 0,1528 | 0,2848 |
| *Machairodus aphanistus* | BAT-3'07 698 | 1 | 0 | 0 | 1,0426 | NA | NA | NA | NA | 0,45265 | 0,4678 | 0,4536 | NA | 0,2721 |
| *Machairodus aphanistus* | BAT-3'08 252 | 1 | 0 | 0 | 0,9808 | 0,6622 | 0,2118 | NA | 0,6343 | 0,44837 | 0,4382 | 0,4511 | 0,0799 | NA |
| *Machairodus aphanistus* | BAT-3'09 1017 | 1 | 0 | 0 | 0,988 | 0,5745 | 0,1440 | 0,3693 | 0,6095 | 0,46272 | 0,4628 | 0,4701 | 0,1714 | 0,2928 |
| *Machairodus aphanistus* | BAT-3'09 1344 | 1 | 0 | 0 | 1,0719 | NA | NA | NA | NA | 0,4749 | 0,4788 | NA | NA | NA |
| *Machairodus aphanistus* | BAT-3'11 970a | 1 | 0 | 1 | 1,0044 | 0,6307 | 0,1431 | 0,3165 | 0,6234 | 0,48446 | 0,4620 | 0,4110 | 0,1410 | 0,3045 |
| *Machairodus aphanistus* | BAT-3'13 1916b | 1 | 0 | 1 | 1,0611 | 0,6634 | 0,1327 | 0,3002 | 0,6206 | 0,48646 | 0,4518 | 0,4889 | 0,1265 | 0,2948 |
| *Amphimachairodus giganteus* | BC-102 | 1 | 0 | 1 | 0,9057 | 0,5159 | 0,1060 | 0,4288 | 0,5714 | 0,34877 | 0,3953 | 0,4434 | 0,2160 | 0,2877 |
| *Smilodon fatalis* | M7786-9732 | 0 | 0 | 0 | 0,9005 | 0,3808 | 0,1025 | 0,5219 | 0,7071 | 0,38022 | 0,3984 | 0,5056 | 0,3654 | 0,3347 |
| *Megantereon* sp. Indet. | CB-20 | 1 | 1 | 0 | 0,8990 | 0,4478 | 0,1203 | 0,4476 | 0,6509 | 0,42799 | 0,4095 | 0,4538 | 0,2811 | 0,3469 |
| *Xenosmilus hodsonae* | BC-113 | 0 | 0 | 0 | 0,8596 | 0,4556 | 0,2175 | 0,3459 | 0,5455 | 0,27663 | 0,3942 | 0,5105 | 0,1783 | 0,3372 |
| *Dinofelis barlowi* | M5913 | 1 | 1 | 0 | 0,9435 | 0,5735 | 0,0683 | 0,4491 | 0,6126 | 0,4001 | 0,4583 | 0,5421 | 0,2195 | 0,2692 |
| *Homotherium crenatidens* | CB-06 | 1 | 1 | 0 | 0,8874 | 0,4924 | 0,0815 | 0,4276 | 0,5613 | 0,42677 | 0,3697 | 0,5255 | 0,2392 | 0,3201 |
| *Panthera leo* | MNCN COMP-255 | 1 | 0 | 1 | 1,0458 | 0,5746 | 0,1754 | 0,2907 | 0,574 | 0,5313 | 0,4043 | 0,4049 | 0,1435 | 0,3501 |
| *Panthera tigris* | MNCN COMP-999 | 1 | 0 | 0 | 0,9375 | 0,5627 | 0,1775 | 0,3114 | 0,5315 | 0,46656 | 0,4296 | 0,4482 | 0,1381 | 0,3053 |
| *Panthera uncia* | BC-56 | 1 | 0 | 0 | 0,9656 | 0,6818 | 0,1365 | 0,2550 | 0,5662 | 0,48409 | 0,4608 | 0,3814 | 0,1029 | 0,3005 |
| *Panthera pardus* | AMNH 113745 | 1 | 0 | 0 | 0,9725 | 0,6194 | 0,0862 | 0,3889 | 0,6013 | 0,7033 | 0,4655 | 0,4150 | 0,177 | 0,2781 |
| *Panthera onca* | MAV-2415 | 1 | 0 | 0 | 0,9547 | 0,6231 | 0,1973 | 0,2177 | 0,5275 | 0,46094 | 0,4358 | 0,4048 | 0,0947 | 0,3404 |
| *Puma concolor* | ISM-ZOO 693928 | 1 | 0 | 0 | 0,9684 | 0,5926 | 0,1995 | 0,2855 | 0,5459 | 0,50119 | 0,4993 | 0,4479 | 0,1134 | 0,2839 |
| *Lynx rufus* | OUVC 9576 | 1 | 0 | 0 | 1,0188 | 0,6385 | 0,1278 | 0,3288 | 0,5623 | 0,51563 | 0,4678 | 0,469 | 0,1314 | 0,2683 |
| *Acinonyx jubatus* | MNCN-COMP 3438 | 1 | 0 | 0 | 0,9752 | 0,7530 | 0,1433 | 0,1761 | 0,4687 | 0,56784 | 0,4854 | 0,4619 | 0,0486 | 0,2273 |
| *Caracal caracal* | MAV-1518 | 1 | 0 | 0 | 1,1416 | 0,6953 | 0,1476 | 0,2644 | 0,5516 | 0,62673 | 0,5291 | 0,429 | 0,0867 | 0,2411 |
| *Felis lybica* | MAV-965 | 1 | 0 | 0 | 1,0426 | 0,6882 | 0,1330 | 0,264 | 0,8744 | 0,80628 | 0,7306 | 0,4564 | 0,1563 | 0,4358 |
| *Neofelis nebulosa* | BC-005 | 1 | 0 | 0 | 1,0156 | 0,5387 | 0,1669 | 0,3165 | 0,5678 | 0,48061 | 0,3981 | 0,4570 | 0,1671 | 0,3609 |

**Table S4:** Value of adjusted R² for the linear regressions between the different PC and the log centroid size of our Procrustes coordinates

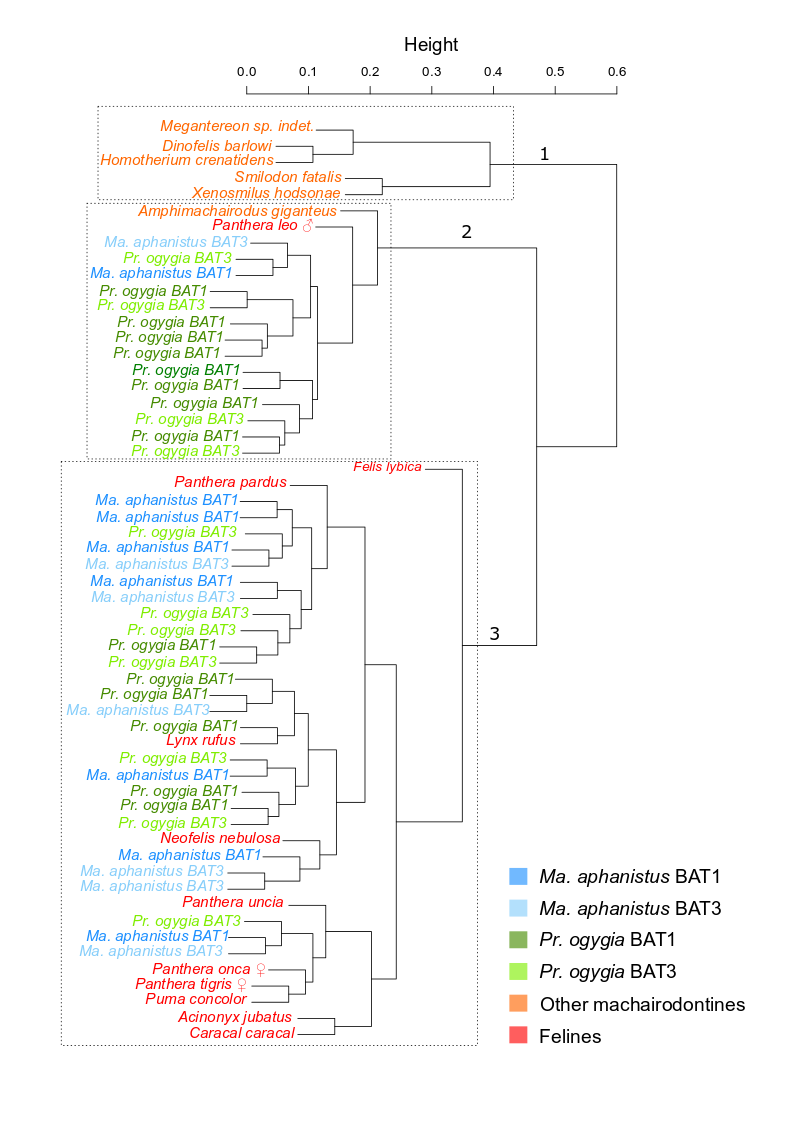
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **PC** | **R² adj** | **PC** | **R² adj** | **PC** | **R² adj** | **PC** | **R² adj** |
| **1** | **0.12807739** | **13** | **-0.01874813** | **25** | **0.00136014** | **37** | **-0.0154037** |
| **2** | **-0.01735989** | **14** | **-0.01144597** | **26** | **-0.02207509** | **38** | **-0.01723378** |
| **3** | **0.21838625** | **15** | **0.00376699** | **27** | **-0.01796123** | **39** | **0.01642786** |
| **4** | **-0.01176964** | **16** | **0.01036794** | **28** | **-0.005067** | **40** | **-0.00708345** |
| **5** | **-0.02221738** | **17** | **0.00952834** | **29** | **-0.00384574** | **41** | **-0.00511521** |
| **6** | **0.0990906** | **18** | **0.00221021** | **30** | **-0.0148014** | **42** | **-0.01874152** |
| **7** | **-0.02220852** | **19** | **0.01945319** | **31** | **-0.02218375** | **43** | **-0.02195374** |
| **8** | **-0.01109439** | **20** | **-0.00561318** | **32** | **-0.01960031** | **44** | **-0.01990454** |
| **9** | **-0.00621554** | **21** | **-0.02090758** | **33** | **-0.01447225** | **45** | **-0.01513654** |
| **10** | **-0.02140733** | **22** | **-0.01526603** | **34** | **-0.0219645** | **46** | **-0.02153584** |
| **11** | **0.02522228** | **23** | **-0.01641054** | **35** | **-0.00547641** |  |  |
| **12** | **-0.02034679** | **24** | **-0.01901922** | **36** | **-0.00430507** |  |  |

**Table S5:** Centroids (Fig. 4d, e) coordinates.

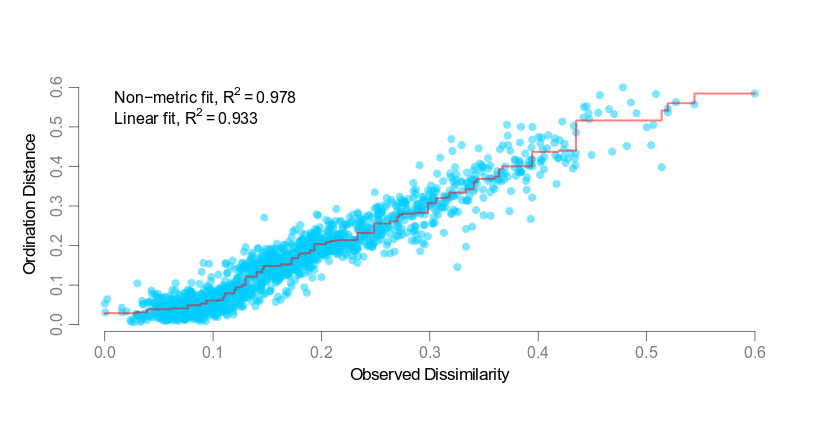
|  |  |  |
| --- | --- | --- |
| **PCA** | **PC1** | **PC2** |
| *Pr. ogygia* BAT1 | 0.02798743 | -0.01211722 |
| *Pr. ogygia* BAT3 | 0.02394467 | -0.0255313 |
| *Ma. aphanistus* BAT1 | 0.01598659 | 0.01579475 |
| *Ma. aphanistus* BAT3 | 0.01701075 | -0.00948565 |
| **PCOA** | **Axis 1** | **Axis 2** |
| *Pr. ogygia* BAT1 | -0.08065917 | 0.01355889 |
| *Pr. ogygia* BAT3 | 0.004026247 | -0.04004372 |
| *Ma. aphanistus* BAT1 | 0.07343277 | 0.005345937 |
| *Ma. aphanistus* BAT3 | 0.08480895 | 0.04050862 |



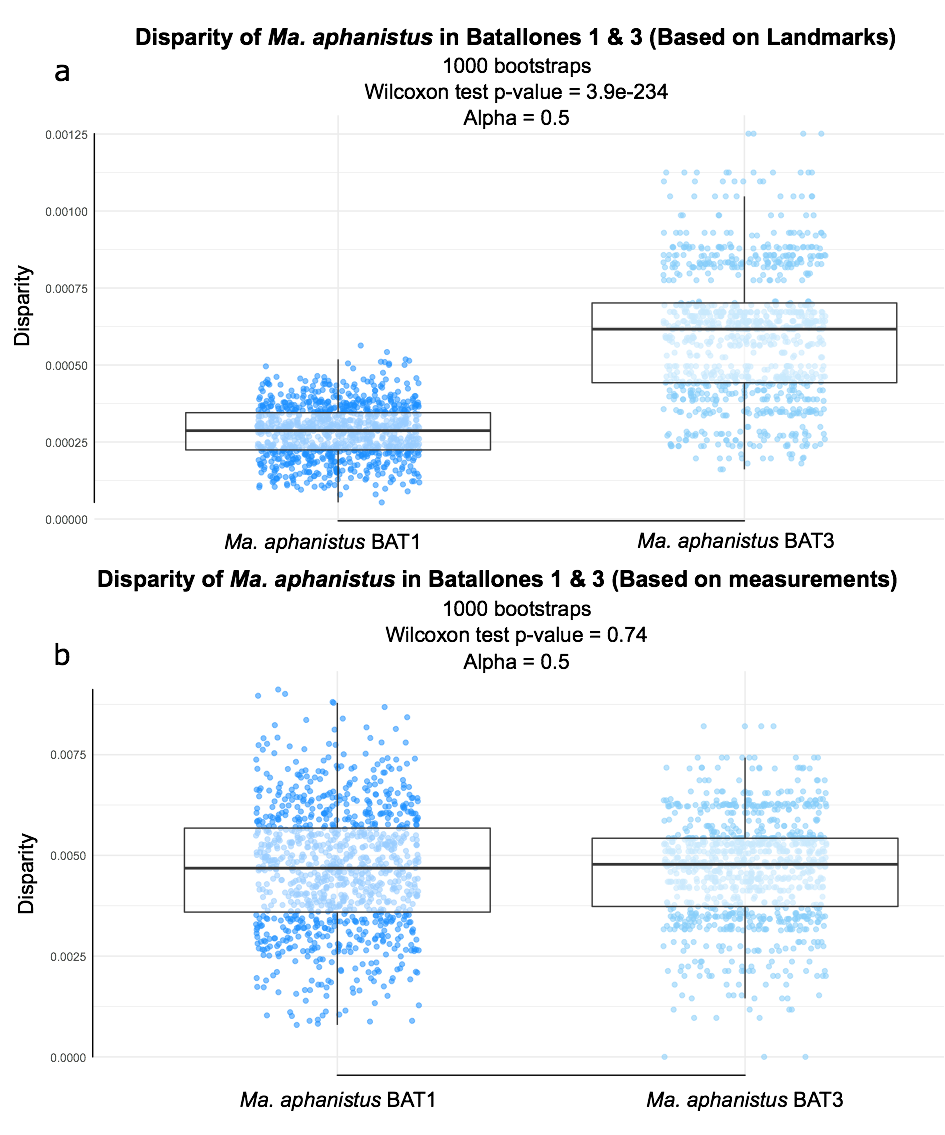
**Figure S1**: Regressions between the log centroid size and the first two PC scores: PC1 (**a** and **b**) and PC2 (**c** and **d**). Regressions were done on the whole sample (**a** and **c**) and on the different “group” (**b** and **d**) to make sure some taxa of the sample did not have a mandible shape more influenced by allometry than the others.



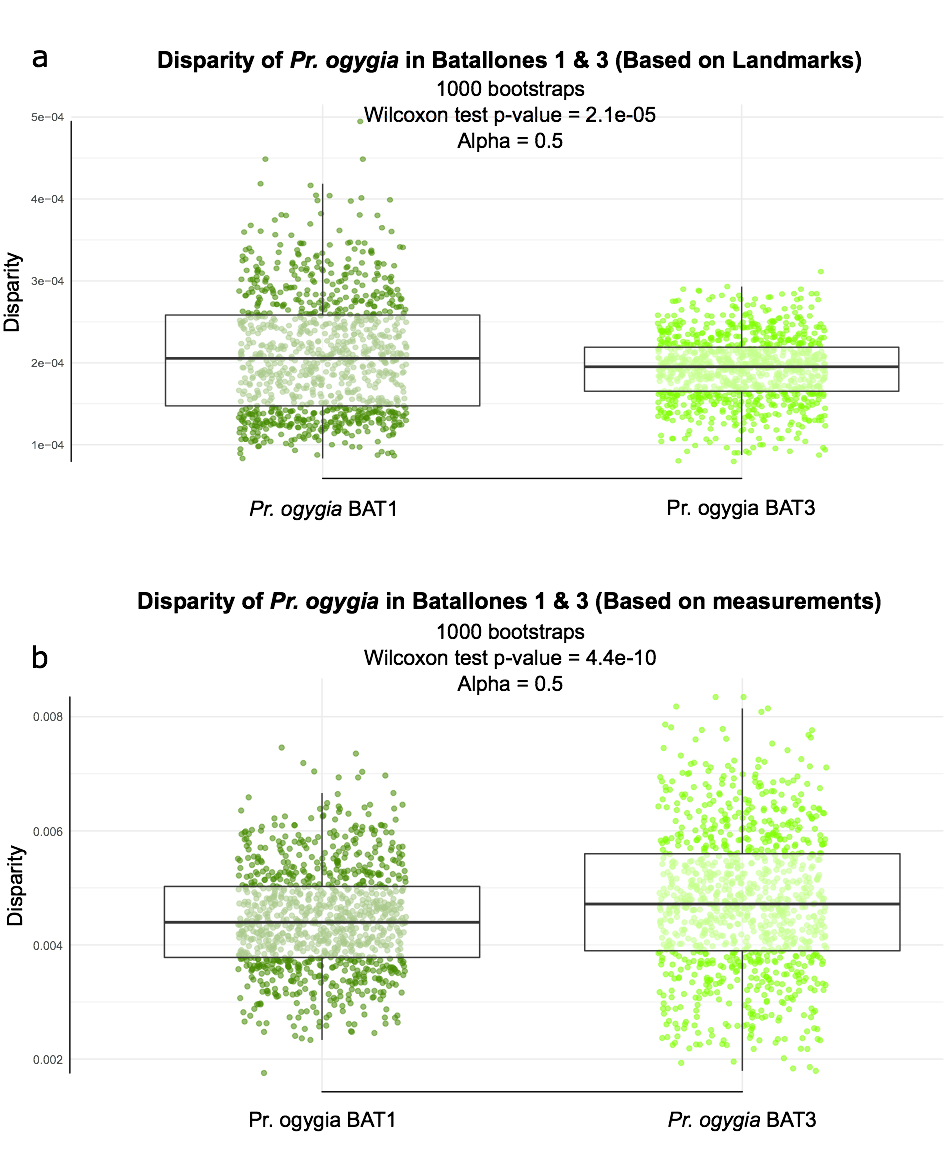
**Figure S2**: Cluster dendrogram analysis using ratios and measurements.

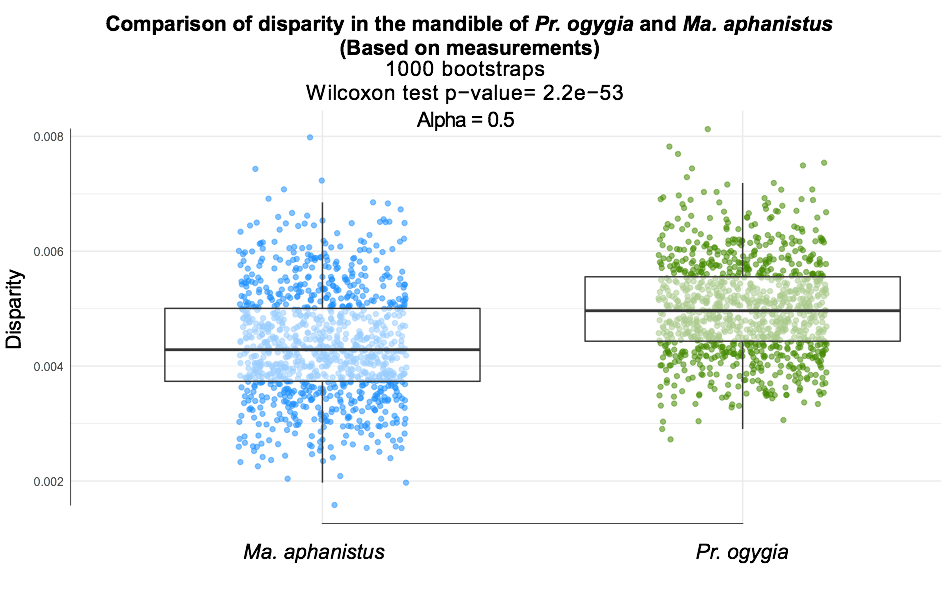


**Figure S3**: Shepard (stress) plot showing the fit between the dissimilarity matrix (based on the measurments) and the ordination distances.



**Figure S4**: Per-site disparity in the mandibular shape of *Ma. aphanistus*. **a**: 3DGM; **b**: 2DM.

**Figure S5**: Per-site disparity in the mandibular shape of *Pr. ogygia.* **a**: 3DGM; **b**: 2DM.



**Figure S6**: Comparison of the disparity between *Ma. aphanistus* and *Pr. ogygia* using the 2DM data.